AY 120 Lab Rubric

Format [5 points]

Contains title, date, name, contact information, lab group, and any division of labor.	1
Does not exceed 10 pages (including tables and figures).	1
12-point font is used.	1
Spelling-check has been run.	1
Grammar has been checked.	1

Comments:

Abstract [5 points]

Succinctly states the objectives, methods, and principal conclusions of the experiment	5
Less succinct, may contain some off topic statements but states the key objectives, methods, and conclusions.	4
Verbose, lacks focus, may be missing key components of the lab summary.	3
Verbose, follows the lab handout extremely closely, conveys only a tenuous understanding of the lab's purpose.	2
Verbose, does not reflect the actual purpose of the lab, contains details or irrelevant information.	1

Comments:

Introduction [10 points]

Concisely motivates the problem and introduces the methods used in pursuing it.	10
Less concise, may contain irrelevant information that detracts from the central purpose but states the overall goal and the key methods.	8
Verbose, lacks focus, the purpose of the lab is not central, and the key methods may not be introduced.	6
Verbose, draws excessively from the lab handout, methods are not introduced.	4
Verbose, the purpose of the lab is not clear, methods are not introduced.	2

Comments:

Observations & Data [5 points]

Describes the equipment used and how the data were acquired. Provides a clear log or summary of the observations, containing the observation times, dates, personnel involved, etc. Summarizes any anomalies or systematic errors that may be present in the data.	5
All important information for the data acquisition is present, but there may be organizational or logical lapses. Potential anomalies and systematic errors are described.	4
Mediocre organization, some relevant observational information may be missing or not adequately described. Possible systematic errors are not described.	3
Poor organization, key observational information needed to reproduce the experiment may be missing, anomalies are not described.	2
Poor organization, the given information is inadequate for the reader to successfully repeat the experiment, anomalies are not described.	1

Comments:

Data Reduction & Manipulation [5 points]

Describes data reduction methods/algorithms and statistical methods used to analyze the data or combine it into the final result. Methods used to estimate uncertainties in the data are clearly explained. The reader is is adequately led through intermediate to final results with each consecutive step clearly explained.	5
Data reduction and uncertainty estimation techniques are present, but each step may not be fully explained. The reader may not be fully convinced that the results and uncertainties are reliable.	4
Some data reduction techniques are listed, but the description lacks organization and clarity. Uncertainty estimates may be missing or incorrect.	3
Data reductions steps are only partially described, and some steps may be incorrect. Uncertainty estimates are absent or in error.	2
Key steps in the data reduction process are not described in the text. Error estimates are absent. The reduction steps are likely in error.	1

Comments:

Calculations & Modeling [10 points]

Demonstrates complete understanding of the physical principles underlying the experiment. Intermediate calculations with plots or tables appear in a logical sequence throughout and are sufficient to convince the reader that the final results are correct. A equations used appear in the text with equation numbers and references. Equations are described and explained as part of sentences within the context of the experiment and all new symbolic quantities are defined. Figures and tables have clear captions, numbers, and labels, are referred to in the body of the report, are placed in the text close to where they are referenced, and are used to support key arguments in the text	10
Demonstrates nearly complete understanding of physical principles. Intermediate calculations are present, and the organization is fairly clear. All equations used are listed and mostly explained. Figures and tables are used throughout to support key arguments in the text. Calculations appear generally correct and complete, but may contain some minor errors	8
Shows partial understanding of the relevant physical principles. Intermediate calculations may be sparse, and organization may be lacking. Equations are listed but may not be adequately explained. Figures and tables may appear without reference in the text. Important calculations may be absent or contain major computational errors.	6

Shows limited understanding of the relevant physical principles. Intermediate calculations may be absent, and organization is unclear. Key equations may be missing, poorly explained, or in error. Key figures and tables may be absent, or demonstrate major computational errors.	4
Shows very little understanding of the relevant physical principles. No attempt at the end result may be present, let alone intermediate calculations. Organization is unclear equations are missing or in error, and important figures or tables are absent without explanation.	2

Comments:

Discussion [10 points]

Synthesizes, analyzes, and interprets the results in the context of the experimental purpose. Compares results achieved with theoretical expectations. Explains discrepancies between theory and results appropriately in terms of errors in measurement and technique. Describes remaining ambiguities, uncertainties, and avenues for future investigation. Includes an insightful summary of conclusions.	10
Reiterates the main results with some ties to the experimental purpose. Compares results achieved with theoretical expectations. Explains discrepancies between theory and results but may contain omissions or oversights. The summary may needlessly repeat information described previously in the report without revealing new insights.	8
Reiterates the main results with some ties to the experimental purpose. Compares results achieved with theoretical expectations but explanations for discrepancies may be vague or wordy. The summary may needlessly repeat information described previously in the report without revealing new insights.	6
Main results may not be clear, or may not be tied to the original purpose of the experiment. Comparison with theory may be excluded or may contain large errors. Concluding remarks may be absent.	4
Main results are not given, and the text is not tied to the introduction. Comparison with theory and concluding remarks may be sparse or completely absent.	2

Comments:

Overall Structure & Style [10 points]

The lab report reads as a narrative describing the group's and individual's activities. The overall goal and methods are clear from the beginning and serve as a key driver throughout the text. The report follows a logical structure on all scales, from sentences, to paragraphs, to subsections, to sections, and conveys the maximum amount of information in the minimum number of words. The activities described demonstrate initiative and creativity on the part of the individual.	10
The overall structure of the report, including the experimental goals and methods, are clear throughout, though perhaps uninspiring. The text is mostly clear, but the balance between sections may be slightly off, or some phrases may be awkward. The report is complete but contains no new or surprising insights.	8
The report as a whole contains significant organizational flaws. The experiment purpose may be buried, or key results may be inadequately described. The text may not flow well, or may be confusing at times.	6
The lab report is poorly structured. The experimental purpose may be unclear. Key figures or tables may be present but without explanation.	4
Organization and logical structure are absent. The experimental purpose is unclear, and the lab is incomplete.	2

Comments: